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(71)Applicant :

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(54) FOOD PACKING BAG

(57)Abstract:

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SOLUTION: In a food packing container comprising heat-sealing an unstretched laminated film, the laminated film has a multilayered structure wherein a copolymerized polybutylene terephthalate resin layer A arranged to the outermost layer, a gas barrier resin layer B and a heat sealable resin layer C arranged to the innermost layer are successively laminated. The polybutylene terephthalate unit ratio of the resin layer A is set to 70-99 mol.%.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] About a food packing bag, in detail, in case this invention manufactures a ham sausage etc., it relates to the food packing bag used suitably.

[0002]

[Description of the Prior Art] Generally, after a ham sausage fills up with a raw material the bag which consists of a shrink film, it is heat-treated and manufactured within a retainer. And a printing label is stuck on a bag front face in advance of shipment. In order to influence the bond strength of a label with the moisture of a label attachment side, as for the bag front face of the product taken out from the inside of a retainer, it is desirable for a water break to be so good that dryness not needed before label attachment. Moreover, the pinhole-proof nature which was excellent at the time of transportation is required.

[0003]

[Problem(s) to be Solved by the Invention] this invention is made in view of the above-mentioned actual condition, and the purpose is in offering the food packing bag excellent in a label bond strength and pinhole-proof nature.

[0004]

[Means for Solving the Problem] That is, the summary of this invention is a food packing container which heat seals a non-extended laminated film and changes, and the above-mentioned laminated film consists in the food packing bag characterized by having the multilayer structure which carried out the laminating of the heat-sealing nature resin layer (C) arranged at least at the copolymerization polybutylene-terephthalate-resin (layer A) gas barrier nature resin layer (B) arranged at an outermost layer of drum, and an innermost layer one by one.

[0005]

[Embodiments of the Invention] Hereafter, this invention is explained in detail. The food packing bag of this invention heat seals a non-extended laminated film, and is constituted. And the above-mentioned non-extended laminated film has the multilayer structure which carried out the laminating of the heat-sealing nature resin layer (C) arranged at least at the copolymerization polybutylene-terephthalate (PBT) resin (layer A) gas barrier nature resin layer (B) arranged at an outermost layer of drum, and an innermost layer one by one. And in the desirable mode of this invention, an adhesive resin layer is arranged between above-mentioned each class.

[0006] In a copolymerization PBT resin layer (A), each following component is mentioned as a copolymerization component. That is, as a dicarboxylic acid, an isophthalic acid, a phthalic acid, 2, 6-naphthalene dicarboxylic acid, an adipic acid, a sebacic acid, hydroxy acids (for example, P-oxy-benzoic acid etc.), etc. are mentioned, and ethylene glycol, a diethylene glycol, a propylene glycol, 1, 4-cyclohexane dimethanol, neopentyl glycol, a polyethylene-oxide glycol, a polypropylene-oxide glycol, a polytetramethylene oxide glycol, etc. are mentioned as a glycol component. These dicarboxylic-acid components and a glycol component may use two or more sorts together. And the rate of the PBT unit

guided from a terephthalic acid and a butylene glycol is usually 85-99-mol a unit to which it is % and the remainder is guided from the above-mentioned copolymerization component preferably 70-99-mol%. The melting point of this copolymerization PBT resin has the desirable range of 200-223 degrees C. Incidentally, the melting point of a gay PBT resin is 225 degrees C.

[0007] in this invention, a polytetramethylene oxide glycol recommends as a copolymerization component of a copolymerization PBT resin layer (A) -- having -- the number average molecular weight -- desirable -- 300-6000 -- it is the range of 500-2000 still more preferably This copolymerization PBT resin that carries out condition satisfaction does not spoil thermal resistance, carries out it, it gives flexibility to a film, and moreover, since it excels in low-temperature strong ductility, it has the pinhole-proof nature exceeding a gay PBT resin.

[0008] It is desirable to make a copolymerization PBT resin layer (A) contain the anti blocking agent which consists of an organic particle or a non-subtlety particle from a viewpoint of the blocking resistance at the time of laminating storage of a food packing bag.

[0009] As an anti blocking agent which consists of the above-mentioned organic particle, independent or the particles which may contain the cross linking agent which consists of a copolymer etc., such as polystyrene, polyethylene, a polyamide, polyester, polyacrylic ester, a polymethacrylic acid ester, an epoxy resin, polyvinyl acetate, and a polyvinyl chloride, are mentioned, for example. On the other hand, as an anti blocking agent which consists of the above-mentioned non-subtlety particle, talc, a kaolin, a silica, a calcium carbonate, the end of a glass powder, etc. are mentioned.

[0010] The mean particle diameter of each above-mentioned anti-blocking agent is usually about 1-10 micrometers, and the 100-10,000 ppm of the amount used are usually 1,000-5,000 ppm preferably to a resin. In this invention, the anti blocking agent which consists of an organic particle is recommended, and the particle of polyacrylic ester or a polymethacrylic acid ester is used especially suitably.

[0011] A gas barrier nature resin layer (B) consists of which resins chosen from the group of a polyamide (PA), an ethylene-vinylacetate-copolymer saponification object (EVOH), a polyethylene terephthalate (PET), polyethylenenaphthalate (PEN), and a polycarbonate (PC). In these, a polyamide (PA) or an ethylene-vinylacetate-copolymer saponification object (EVOH) is desirable, and a polyamide (PA) is desirable especially.

[0012] In this invention, the polyamide obtained according to the polycondensation of each polyamide raw material of the lactam more than (1) 3 member ring, omega-amino acid in which (2) polymerizations are possible, and a (3) diamines and a dicarboxylic acid can be used.

[0013] As a lactam more than 3 member rings, an epsilon caprolactam, an ENANTO lactam, alpha-pyrrolidone, alpha-piperidone, etc. are mentioned, and, specifically, a 6-amino hexanoic acid, a 7-amino oenanthic acid, a 11-amino undecanoic acid, a 9-amino nonoic acid, etc. are mentioned as omega-amino acid in which a polymerization is possible.

[0014] As a diamine, a hexamethylenediamine, a nonamethylene diamine, an undecamethylene diamine, a dodeca methylene diamine, a meta key silylene diamine, etc. are mentioned, and, specifically, a terephthalic acid, an isophthalic acid, an adipic acid, sebacic acid, a dodecane dibasic acid, a glutaric acid, etc. are mentioned as a dicarboxylic acid.

[0015] As an example of the polyamide used by this invention, nylon 4, 6, 7, 8, 11, 12, and 6, 6 and 6, 10 and 6, 11 and 6, 12 and 6T, 6/6, 6 and 6 / 6 [12 and]/6T, and 6I / 6T grade are mentioned.

[0016] A heat-sealing nature resin layer (C) usually A high density polyethylene (HDPE), A medium density polyethylene (MDPE), a low density polyethylene (LDPE), Polypropylene (PP), an ethylene vinyl acetate copolymer (EVA), An ethylene methacrylate copolymer (EMA), an ethylene ethyl acrylate copolymer (EEA), An ethylene methacrylate copolymer (EMMA), an ethylene ethyl-acrylate copolymer (EAA), an ethylene ethyl-methacrylate copolymer (EMAA), adhesive polyethylene, an ionomer resin, a EVA saponification object, and a line -- low density polyethylenes (L-LDPE) or those copolymers are used the inside of these -- a line -- a low density polyethylene (L-LDPE) is desirable

[0017] a line -- a low density polyethylene (L-LDPE) is the copolymer (ethylene content : 86-99.5-mol %) of ethylene and the alpha olefin of carbon numbers 3-13, and LDPE manufactured by the conventional high pressure process is polyethylene of different low Naka density The former of the

structural difference from high pressure processes LDPE and LLDPE is the molecular structure of the latter of many branching, and the latter is a point used as the straight chain-like molecular structure. In manufacture of LLDPE, butene-1, a pentene -1, a hexene -1, an octene -1, and 4-methyl pentene-1 grade are mentioned as an alpha olefin by which copolymerization is carried out to ethylene. These copolymerization is performed by the low medium-voltage method which used the so-called Ziegler Natta catalyst.

[0018] If a tradename shows the example of above LLDPE, an isotropic antenna (UCC), Dow-Jones REKKUSU (Dow Chemical), SUKUREA (DEYUPONKANADA), MAREKKUSU (Philips), neo ZETSUKUSU and ULTZEX (Mitsui petrochemistry), Nippon Oil RINIRETSUKUSU (Nippon Oil chemistry company), suitor MIRETSUKUSU (DSM company), etc. will be mentioned.

[0019] An adhesive resin layer usually consists of denaturation polyolefin resin (APO). the polyolefin resin to which this APO made the ethylene component and/or the propylene component the main constituent -- alpha, beta unsaturated carboxylic acid, or its derivative -- copolymerization -- and/or, graft polymerization is carried out and it is manufactured

[0020] As the above-mentioned polyolefin resin, polyethylene, polypropylene, an ethylene propylene rubber, an ethylene-butene-1 copolymer, an ethylene vinylacetate copolymer, an ethylene-acrylic-acid copolymer, an ethylene-ethyl acrylic-acid copolymer, an ethylene-acrylic-acid sodium copolymer, etc. are mentioned, for example.

[0021] As the above-mentioned alpha by which copolymerization is carried out, beta-unsaturated carboxylic acid, or its derivative, an acrylic acid, a methacrylic acid, a methyl methacrylic acid, acrylic-acid sodium, acrylic-acid zinc, vinyl acetate, glycidyl methacrylate, etc. are mentioned, and it is contained by within the limits within 40 mol % in a chain. As copolymerization denaturation polyolefin resin, an ethylene vinylacetate copolymer, an ethylene-acrylic-acid copolymer, an ethylene-ethyl acrylic-acid copolymer, an ethylene-acrylic-acid sodium copolymer, etc. are mentioned, for example.

[0022] As the above-mentioned alpha by which a graft is carried out, beta-unsaturated carboxylic acid, or its derivative, an acrylic acid, a methacrylic acid, an ETAKURIRU acid, a maleic acid, fumaric acids, these acid anhydrides, or the ester of these acids is mentioned, for example. Especially in these compounds for denaturation, a maleic anhydride is suitable. Moreover, the amount of grafts is preferably chosen from 0.05 - 1.5% of the weight of the range 0.01 to 25% of the weight to polyolefin resin.

[0023] A graft reaction is usually performed according to a conventional method by carrying out melting mixture of polyolefin resin, alpha, and beta-unsaturated carboxylic acid or its derivative at the resin temperature of 150-300 degrees C. In order to make it react efficiently on the occasion of a graft reaction, it is good to blend organic peroxide, such as alpha and alpha'-screw-tert-butyl peroxide-p-diisopropylbenzene, 0.001 to 0.05% of the weight.

[0024] In the above-mentioned non-laminated film, a copolymerization PBT resin layer (A) is arranged at an outermost layer of drum, and a heat-sealing nature resin layer (C) is arranged at an innermost layer, and a gas barrier nature resin layer (B) is arranged in these middle. (A) 5-100 micrometers of 5-50 micrometers of 20-100 micrometers of 10 - 30-micrometer and (C) layer thickness are usually preferably set [layer thickness] to 30-70 micrometers for 10-70 micrometers and (B) layer thickness. And 2-30 micrometers of adhesive resin layer thickness arranged between each class in a desirable mode are usually preferably set to 5-15 micrometers.

[0025] The food packing bag of this invention manufactures the cylinder object of a laminated film by the bottom Mukai water-cooled fabricating method which used for example, the co-extrusion annular die, and, subsequently is manufactured by heat sealing the edge of a cylinder object. You may manufacture a laminated film by the T die method. And the above-mentioned heat sealing is usually performed as gusset processing. The above-mentioned coextrusion process and gusset processing are the technology in which itself and all are well-known, and the outline of the desirable mode is as follows.

[0026] Namely, the facility with which the ring for sizes arranges the tank with which the interior was equipped, arranges ***** and a winding roll one by one under the tank concerned, and usually changes under the annular die is used for the above-mentioned coextrusion process. After ***** (ing) the raw material resin of a kind two or more from an annular die so that extension may not take place

substantially, passing between the rings for sizes and cooling, it is the method of supplying and folding up the cylinder object of a laminated film on a winding roll through *****, and rolling round as a double film. Therefore, the laminated film obtained is a unstretched film substantially, and each heating contraction (JIS K 6734) of the length direction (MD) and the cross direction (TD) is 5% or less in the desirable mode.

[0027] Gusset processing is the processing method for inserting into the edge of a cylinder object and performing a seal, and in the usual gusset processing, the edge of a cylinder object is formed in the shape of a rectangle, it piles up two sides of others [carry out / the valley chip box of the two sides which counter / from those centers of abbreviation], and heat seals them with a straight-line-like heat-sealing bar along an edge.

[0028] Although the food packing bag of this invention is suitably used in case it manufactures for example, a hum sausage etc., it has the feature of excelling in the label bond strength immediately after taking out from a retainer, by having constituted the outermost layer of drum with the copolymerization PBT resin especially. The fact referred to as that it is not attained but is attained by specific polyester resin depending on a PBT resin, PET of the same kind, or a PEN resin as shown in the after-mentioned example of comparison although this feature is presumed that the water break of the resin which constitutes the above-mentioned outermost layer of drum is based on the reason for being very good is a very unexpected fact.

[0029] Especially the food packing bag of this invention with which the outermost layer of drum consisted of copolymerization PBT resins has the feature of excelling also in the curl-proof nature of the laminated film itself. That is, although the open end of a gusset bag may curl and the food packing bag with which the outermost layer of drum consisted of resins other than a PBT resin may cause trouble at the time of raw material restoration, this problem is not generated into the food packing bag with which the outermost layer of drum consisted of copolymerization PBT resins.

[0030]

[Example] Hereafter, although an example explains this invention still in detail, this invention is not limited to the following examples, unless the summary is exceeded.

[0031] By the bottom Mukai water-cooled fabricating method which used the 15 layer co-extrusion annular die of examples, the cylinder object of the laminated film which has the lamination of copolymerization PBT (8 micrometers) / APO (6 micrometers) / NY:nylon 6 (16 micrometers) / APO (6 micrometers) / L-LDPE (44 micrometers) was manufactured. The melting point is 222 degrees C, a copolymerization component is the polytetramethylene oxide glycol of number average molecular weight 1000, and the content is 2.5-mol %, and 2,000 ppm of polymethylmethacrylate (PMMA) particles of 6 micrometers of mean particle diameters were blended and used for the above-mentioned copolymerization PBT as an ANCHIPU locking agent. In the extrusion temperature, 240 degrees C and water-cooled temperature made 28 degrees C and winding speed 15m/min. The slit of the acquired cylinder object was carried out to predetermined length, gusset processing accompanied by straight-line-like heat sealing which met the edge at the end section was performed, and the innermost layer obtained [the outermost layer of drum] the gusset bag of L-LDPE by PBT.

[0032] After filling up the above-mentioned gusset bag with the hum raw material cooked beforehand, it set to the retainer, and heat-treated and the rectangle-like hum whose overall length both every direction of a longitudinal direction core is 8cm, and is 35cm was manufactured. About the obtained hum product, the method of following (1) - (4) estimates a label bond strength, a blocking resistance, pinhole-proof nature, and curl nature, and a result is shown in Table 2 by it.

[0033] (1) Label bond strength : the label was stuck on the front face of the bag of the hum product immediately after taking out from a retainer, and the Peel intensity (g/15mm) was measured.

[0034] (2) pinhole-proof nature: -- a chilled transport test [in / -20 degrees C / cases / ten / (ten bag / case)] / (4 Kuniichi circles) -- carrying out -- the number of ** bags at the time of a transfer -- with, it evaluated

[0035] (3) Blocking resistance : two hum products which dried the front face were piled up and combined, and the slipping nature was measured. The tension tester was used for measurement and

slipping nature was expressed with g to it. It slides, so that more than is small in these g, and a sex is good and a blocking resistance is excellent.

[0036] (4) Curl nature : visual observation of the state of curl of the open end of a gusset bag was carried out.

[0037] Except having changed, as the kind of resin of one to example 2 and example of comparison 3 outermost layer of drum was shown in Table 1, the hum product was manufactured, after obtaining a gusset bag like an example 1. In addition, it was used like the example 1, having blended 3000 ppm of PMMA particles of 6 micrometers of mean particle diameters with the raw material resin of an outermost layer of drum. About the obtained hum product, a label bond strength, a blocking resistance, and pinhole-proof nature are evaluated, and a result is shown in Table 2.

[0038]

[Table 1]

	層構成
実施例 1	共重合PBT/APO/NY/APO/L-LDPE
比較例 1	PET/APO/NY/APO/L-LDPE
比較例 2	PEN/APO/NY/APO/L-LDPE
比較例 3	NY/APO/NY/APO/L-LDPE

[0039]

[Table 2]

	ラベル接着強度 (g/15mm幅)	耐ブロッキング性 (g)	耐ピンホール性 (個数)	カール性(方向)
実施例 1	6 3 2	2 3 5	0	無し
比較例 1	2 7 2	2 3 0	2	有り (内側)
比較例 2	3 1 8	2 3 8	2	有り (内側)
比較例 3	2 2	2 2 5	9	有り (内側)

[0040]

[Effect of the Invention] According to this invention explained above, the food packing bag excellent in a label bond strength and pinhole-proof nature is offered.

[Translation done.]